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'Bonilla' big bluestem

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'Bonilla' big bluestem

'Bonilla' big bluestem, *Andropogon-gerardii* Vitman, has been released cooperatively by the Soil Conservation Service (SCS) and the Agricultural Research Service (ARS) of the United States Department of Agriculture (USDA) and the North Dakota, South Dakota, and Minnesota Agricultural Experiment Stations.

Bonilla big bluestem originated from seed collected at two sites near Bonilla, South Dakota. It was tested as accession SD-27 (PI-315658).

Big bluestem, a native, perennial, warm-season, sod-forming grass, is a major component of the tall grass vegetation which once dominated the prairies of the central and eastern United States. It can be used alone or in mixtures for livestock forage on rangeland, pasture, and hayland. In addition, big bluestem is excellent for wildlife habitat, critical-area seeding, roadside cover, and erosion control.

Because cool-season grasses such as brome grass and crested, tall, intermediate, and pubescent wheatgrasses predominate in the area, forage is often in short supply during the summer months. Using sudangrass or sorghum-sudan hybrids as annual forage crops improves summertime forage. These are very productive, although they must be reestablished each year. Big bluestem grows rapidly from June 1 to late summer. It provides large quantities of forage for livestock when high temperatures retard the growth of cool-season species. Proper management of cool- and warm-season plants ensures good forage indefinitely.

Description

Big bluestem grows 3 to 5 feet tall. Even as a young plant, it can be distinguished from other native grasses by long white hairs on the upper leaf surface near the base of the blade. Having a reddish tint at its base, the stem is round and usually hairy. The seed head normally has three fingerlike branches that resemble a turkey's foot. Bonilla is typical of the species with regard to these characteristics.

Performance

The phenology, forage quality and quantity, palatability, and wildlife habitat potential have been documented in advanced evaluation studies and field plantings in North Dakota, South Dakota, and Minnesota. Bonilla has demonstrated outstanding winter hardiness and seed production ability. Forage production exceeds that of the northern source NDG-4 and is equal to 'Champ' and 'Kaw.' Production at eight locations over an 8-year period averaged 4,000 pounds per acre. At northern sites, the cultivars Champ, 'Pawnee,' and Kaw from southern sources produce more forage in short-term plantings. Over a period of several years, however, pressure from grazing, drought, and winter injury reduces stands and decreases forage production of the southern cultivars in northern areas. In a 3-year grazing study at the University of Minnesota, West Central Experiment Station, Morris, Minnesota, the average daily gain from Bonilla was 3.19 pounds per day.

The flowering (anthesis) data recorded at Fergus Falls, Minnesota, show Bonilla to be 14 to 25 days later than the northern source NDG-4 and 14 to 33 days earlier than Champ, Pawnee, and Kaw.

Establishment

Big bluestem and other warm-season grasses require a soil temperature above 50 °F for satisfactory germination. In the area of adaptation, the optimum time to plant is early May to late June. Dormant seedings have not been successful. The seed is light and has small awns attached. Debearding the seed removes the awns to produce a free-flowing product. Seeding rate is 7 to 10 pounds of pure live seed per acre.

The planting site should be free of perennial or noxious weeds. A moist, firm seedbed is essential. Firming the soil with a roller packer before seeding helps to ensure that the seed is placed at the recommended seeding depth of one-half to three-fourths of an inch. Drills equipped with agitators, double disk openers, packer wheels, and depth bands provide the

best results for nondebearded seed. Broadcast-packer seeders work well for debearded seed. Companion crops are not recommended. Grazing should be deferred during the establishment year.

The application of fertilizer at seeding time is not recommended because it stimulates weed growth. Clipping and following label instructions for 2,4-D help control weeds the first year.

Seed Production

Stand establishment usually can be accomplished in one growing season. Seed production can be expected the second year and will continue indefinitely. The fields should be established in rows 30 to 42 inches apart. Cultivation and 2,4-D according to label instructions can be used to control broadleaf weeds the first year. After the year of establishment, apply Atrazine according to label instructions. Apply irrigation water at the boot and immediately after the flowering stage. Apply 60 to 80 pounds of nitrogen per acre and phosphorus and potassium according to soil tests. Seed matures in September. Harvesting can be done by windrowing when the seed is in the hard-dough stage; direct harvesting can be done when seed has fully matured. When direct harvesting, seed must be dried as soon as possible because damage may take place from heating. Average purity and germination is 85 and 75 percent, respectively. Seed yields average 100 pounds of pure live seed per acre under irrigation at the SCS Plant Materials Center, Bismarck, North Dakota.

Management

If well-established stands of big bluestem are properly managed and maintained, they should not require replanting. Poor stands can be rejuvenated by controlled grazing, by the application of recommended rates of herbicides and fertilizer, and by prescribed burning prior to the beginning of spring growth.

Phosphorus and potassium fertilizer should be applied according to soil tests. Nitrogen should be applied at the rate of 50 to 75 pounds per acre when regrowth in the spring is 4 to 6 inches.

Forage quality will remain high until the seed head emerges. Grazing should begin in mid to late June when grasses reach 12 to 16 inches in height. Overgrazing can cause the stand to decline; therefore, grazing should be stopped when plants have been grazed to within 8 to 12 inches of the ground. If regrowth of more than 12 inches takes place, the plants can be regrazed to 6 to 12 inches. Leaving 12 inches of stubble before frost allows the plants to store carbohydrates and ensures the production of vigorous plant growth in the spring.



Adaptation


The known climatic adaptation of Bonilla is the shaded area on the map. Precipitation for this area ranges from 15 to 30 inches.

Bonilla big bluestem is best suited to light- to medium-textured soils and will tolerate moderately saline or alkaline soils. It will withstand droughty conditions and can be used on such sites for ground cover, but it is best suited to deep, well-drained or moderately wet soils for seed and forage production.

Availability

The Agricultural Research Service (Northern Great Plains Research Laboratory, Mandan, ND 58554) maintains the breeder seed of Bonilla big bluestem, and the Soil Conservation Service Plant Materials Center (P.O. Box 1458, Bismarck, ND 58502) maintains the foundation seed.

For more information on availability and use of Bonilla big bluestem, contact your local SCS or conservation district office. All programs and services of the Soil Conservation Service are offered on a nondiscriminatory basis without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

 Area of adaptation of
'Bonilla' big bluestem



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